TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B87

The dominant heat transfer mechanism that occurs when film boiling is present is...

A. convection.

B. radiation.

C. conduction.

D. induction.

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B144

The heat-transfer mechanism using direct contact transfer of kinetic energy from molecular motion is...

A. radiation.

B. convection.

C. transmission.

D. conduction.

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B188

Which one of the following methods of heat transfer is defined as "the exchange of energy between bodies of electromagnetic waves through an intervening space"?

A. Conduction

B. Convection

C. Electrokinetics

D. Radiation

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B285

The heat transfer mechanism that accounts for the majority of core heat removal during a loss of coolant accident after total core voiding is...

A. conduction.

B. convection.

C. radiolysis.

D. radiation.

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B482

The primary mode of heat transfer from the fuel cladding surface during steam blanketing conditions is...

A. radiation.

B. convection.

C. ionization.

D. conduction.

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B882 (P584)

Refer to the drawing of a fuel rod and coolant flow channel at beginning of core life (see figure below).

Which one of the following is the primary method of heat transfer through the gap between the reactor fuel and the fuel clad?

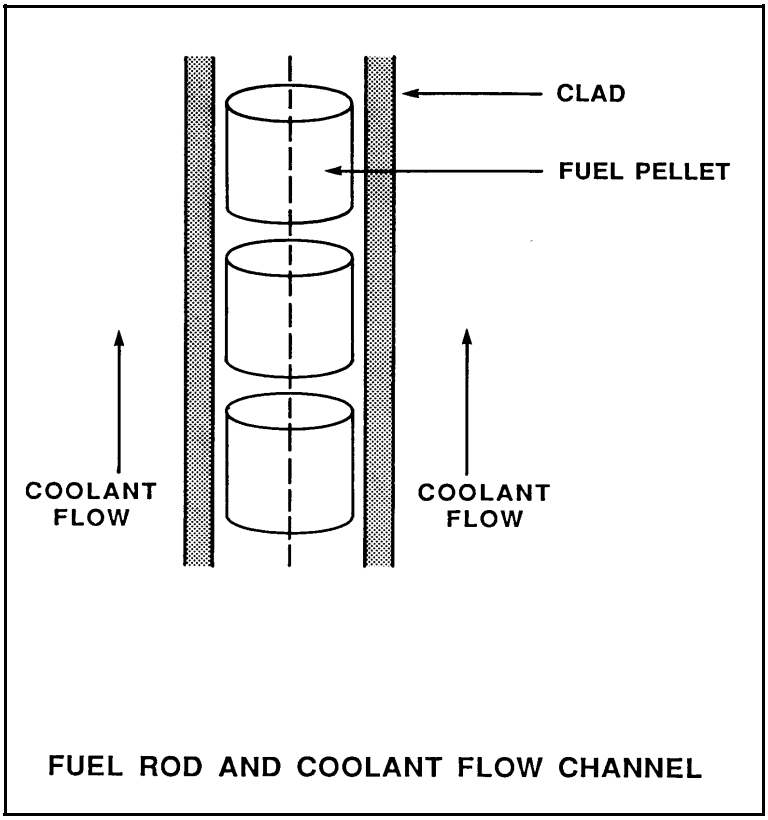
A. Conduction

B. Convection

C. Radiation

D. Natural circulation

ANSWER: A.



FUEL ROD AND COOLANT FLOW CHANNEL

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B1282

The predominant mode of heat transfer from the fuel-clad surface to the coolant during full power operating conditions is...

A. radiation.

B. conduction.

C. forced convection.

D. natural convection.

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B1582

During normal plant operating conditions, which one of the following is the major mode of heat transfer occurring as reactor steam travels from the reactor vessel to the main turbine?

A. Radiolysis

B. Radiation

C. Conduction

D. Convection

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B1982 (P985)

The fuel rods are normally charged with _____ gas to improve the heat transferred by _____ from the fuel pellets to the cladding.

A. helium; convection

B. helium; conduction

C. nitrogen; convection

D. nitrogen; conduction

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B2282 (P2284)

Which one of the following describes a heat transfer process in which convection is the most significant heat transfer mechanism?

A. From the reactor fuel to the core barrel during core uncovery

B. Through the tube walls in a main condenser during normal operation at 100% power

C. From the reactor fuel to the steam outlet of the reactor vessel during a station blackout

D. From the fuel pellet centerline to the fuel clad during normal operation at 100% power

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.01 [3.2/3.2]
QID: B2882 (P2884)

Which one of the following describes a heat transfer flow path in which conduction is the most significant heat transfer mechanism?

A. From the reactor fuel to the core barrel during core uncovery

B. From the main turbine exhaust steam to the atmosphere via main condenser cooling water and a cooling tower during normal operation

C. From the reactor fuel to the steam outlet of the reactor vessel during a station blackout

D. From a fuel pellet to the fuel clad via the fuel rod fill gas during normal operation

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.02 [2.4/2.6]
QID: B1185

In an operating cooling water system, an increased stagnant fluid film thickness _____ heat transfer because conduction heat transfer is _____ efficient than convective heat transfer.

A. enhances; more

B. enhances; less

C. inhibits; more

D. inhibits; less

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.02 [2.4/2.6]
QID: B1682

The buildup of fission gases in a fuel rod causes thermal conductivity of the fuel pellets to _____ and thermal conductivity of the fill gas to _____. (Consider only the direct effect of the fission gases.)

A. decrease; decrease

B. decrease; increase

C. increase; decrease

D. increase; increase

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.02 [2.4/2.6]
QID: B2582

Consider the temperature profile for a typical fuel rod. Which one of the following has the largest thermal conductivity?

A. Fuel pellet

B. Fuel clad

C. Fuel rod fill gas

D. Fission product gases

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.03 [2.7/2.8]
QID: B86

The order of reactor coolant heat transfer mechanisms, from the most efficient to the least efficient, is...

A. nucleate boiling, transition boiling, stable film boiling.

B. stable film boiling, nucleate boiling, transition boiling.

C. nucleate boiling, stable film boiling, transition boiling.

D. stable film boiling, transition boiling, nucleate boiling.

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.03 [2.7/2.8]
QID: B286

As fluid flow rate decreases through the tubes of a shell-and-tube heat exchanger, the laminar film thickness _____, which causes heat transfer rate to _____.

A. increases; decrease

B. increases; increase

C. decreases; decrease

D. decreases; increase

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.03 [2.7/2.8]
QID: B1483

Which one of the following is the order of core heat transfer mechanisms, from the least desirable to the most desirable?

A. Film boiling, single-phase convection, nucleate boiling

B. Film boiling, nucleate boiling, single-phase convection

C. Single-phase convection, nucleate boiling, film boiling

D. Single-phase convection, film boiling, nucleate boiling

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.03 [2.7/2.8]
QID: B2782

The order of reactor coolant heat transfer mechanisms, from the least efficient to the most efficient, is...

A. transition boiling, stable film boiling, nucleate boiling.

B. transition boiling, nucleate boiling, stable film boiling.

C. stable film boiling, nucleate boiling, transition boiling.

D. stable film boiling, transition boiling, nucleate boiling.

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B149

Which one of the following describes parallel and/or counter-flow heat exchangers?

A. Counter-flow heat exchangers are more efficient than parallel-flow heat exchangers due to the high initial ΔT.

B. Counter-flow heat exchangers allow the exiting cooled fluid temperature to be below the exiting cooling fluid temperature.

C. Parallel-flow heat exchangers are more efficient than counter-flow heat exchangers due to the high initial ΔT.

D. Parallel-flow heat exchangers allow the exiting cooled fluid temperature to be below the exiting cooling fluid temperature.

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B199

Which one of the following formulas is representative of the heat-transfer rate across the tubes of a heat exchanger?

Where:

h_t = fluid enthalpy inside tubes
h_{ss} = fluid enthalpy on heat exchanger shell side
T_t = fluid temperature inside tubes
T_{ss} = fluid temperature on heat exchanger shell side

A. $\dot{Q} = \dot{m}\, c_p\, (h_t - h_{ss})$

B. $\dot{Q} = UA\, (h_t - h_{ss})$

C. $\dot{Q} = \dot{m}\, c_p\, (T_t - T_{ss})$

D. $\dot{Q} = UA\, (T_t - T_{ss})$

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B1083

A counterflow lubricating oil heat exchanger is in operation when the cooling water flow rate is reduced to one-half of its former value. Which one of the following will decrease as a result?

A. Lube oil outlet temperature

B. Cooling water outlet temperature

C. Lube oil ΔT

D. Cooling water ΔT

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B1283

Which one of the following formulas includes the heat transfer coefficient of the tubes in a heat exchanger?

A. $\dot{Q} = \dot{m}\Delta h$

B. $\dot{Q} = \dot{m}\Delta T$

C. $\dot{Q} = \dot{m}c_p\Delta T$

D. $\dot{Q} = UA\Delta T$

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B1782

Refer to the drawing of a lube oil heat exchanger (see figure below).

The lube oil heat exchanger is in operation when the cooling water flow rate is increased to twice its former value. Which one of the following will increase as a result?

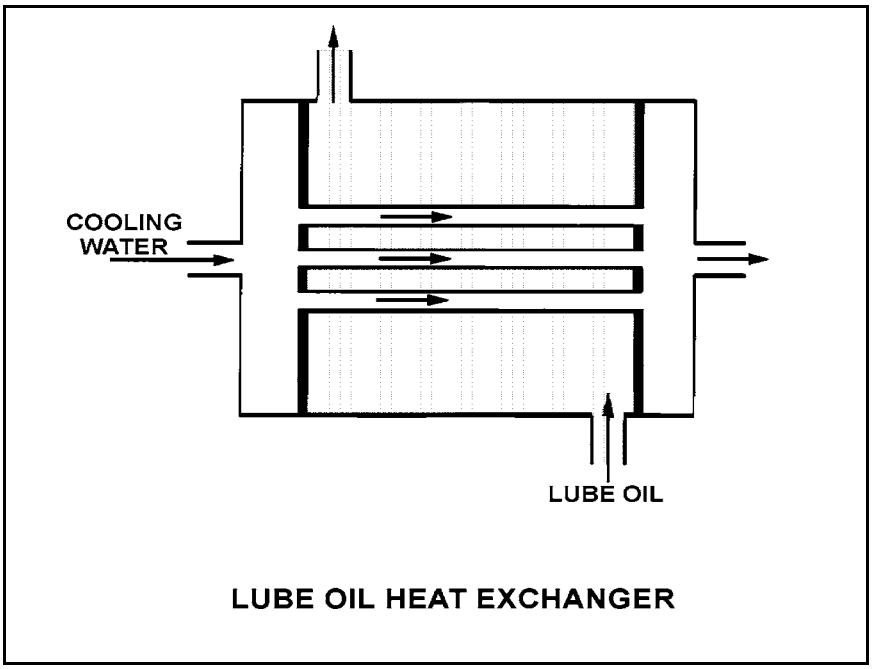
A. Lube oil outlet temperature

B. Cooling water outlet temperature

C. Lube oil ΔT

D. Cooling water ΔT

ANSWER: C.



LUBE OIL HEAT EXCHANGER

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B2583

During a nuclear power plant outage, 6% of the main condenser tubes were plugged. The following 100% power conditions existed before the outage:

Main condenser pressure:	1.10 psia
Cooling water inlet temperature:	60°F
Cooling water outlet temperature:	86°F

After the outage, the plant was returned to 100% power. The following 100% power conditions existed after the outage:

Main condenser pressure:	1.20 psia
Cooling water inlet temperature:	60°F
Cooling water outlet temperature:	?

If the total heat transfer rate in the main condenser is the same, which one of the following will be the approximate final cooling water outlet temperature?

A. 86°F

B. 88°F

C. 90°F

D. 92°F

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.06 [2.7/2.8]
QID: B3082 (P3034)

Refer to the drawing of a lube oil heat exchanger (see figure below).

Given the following lube oil cooling system conditions:

The lube oil flow rate in the lube oil heat exchanger is 200 lbm/min.
The lube oil enters the heat exchanger at 140°F.
The lube oil leaves the heat exchanger at 100°F.
The specific heat of the lube oil is 0.8 Btu/lbm-°F.
The cooling water flow rate is 400 lbm/min.
The cooling water enters the lube oil heat exchanger at 60°F.
The specific heat of the cooling water is 1.0 Btu/lbm-°F.

What is the approximate temperature of the cooling water leaving the lube heat exchanger?

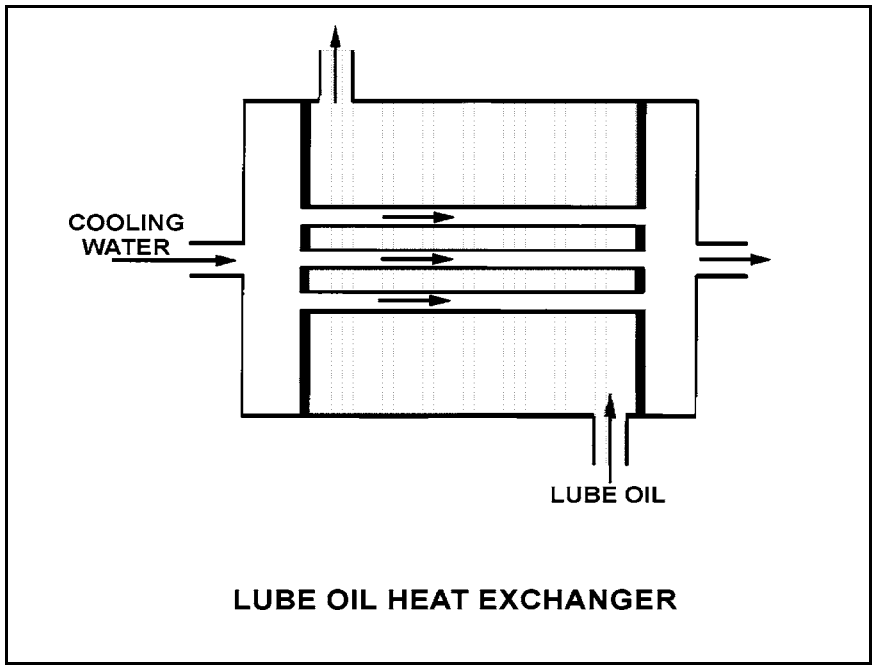
A. 76°F

B. 85°F

C. 92°F

D. 124°F

ANSWER: A.



TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B484

Excessive amounts of entrained gases passing through a single-phase (liquid) heat exchanger are undesirable because...

A. flow blockage can occur in the heat exchanger.

B. the laminar layer will increase in the heat exchanger.

C. the heat transfer coefficient will increase in the heat exchanger.

D. the temperature difference across the tubes will decrease through the heat exchanger.

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B1882 (P1184)

Why is bulk boiling in the tubes of a single-phase heat exchanger undesirable?

A. The bubble formation will break up the laminar layer in the heat exchanger tubes.

B. The thermal conductivity of the heat exchanger tubes will decrease.

C. The ΔT across the tubes will decrease through the heat exchanger.

D. The turbulence will restrict fluid flow through the heat exchanger tubes.

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B2084

The following 100% power conditions existed before a plant outage:

Main condenser pressure:	1.20 psia
Cooling water inlet temperature:	60°F
Cooling water outlet temperature:	92°F

During the outage, 6% of the main condenser tubes were plugged. After the outage, the following 100% rated power conditions exist:

Main condenser pressure:	1.31 psia
Cooling water inlet temperature:	60°F
Cooling water outlet temperature:	?

Which one of the following is the approximate cooling water outlet temperature after the outage?

A. 92°F

B. 94°F

C. 96°F

D. 98°F

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B2184 (P2184)

Which one of the following pairs of fluids undergoing heat transfer through comparable heat exchangers will yield the greatest heat exchanger overall heat transfer coefficient?

A. Oil to water

B. Air to water

C. Steam to water

D. Water to water

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B2383 (P2384)

Which one of the following pairs of fluids undergoing heat transfer in typical cross-flow design heat exchangers will yield the smallest heat exchanger overall heat transfer coefficient?

A. Oil to water in a lube oil cooler

B. Air to water in an air compressor after-cooler

C. Steam to water in a turbine exhaust steam condenser

D. Water to water in a cooling water heat exchanger

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B3084 (P3084)

A reactor plant is operating at 100% rated power. Main turbine extraction steam is being supplied to a feedwater heater. Extraction steam parameters are as follows:

Steam pressure:	750 psia
Steam flow rate:	7.5×10^5 lbm/hr
Steam enthalpy:	1150 Btu/lbm

Saturated liquid condensate at 448°F leaves the feedwater heater via a drain line.

What is the approximate heat transfer rate from the extraction steam to the feedwater in the feedwater heater?

A. 3.8×10^7 Btu/hr

B. 8.6×10^7 Btu/hr

C. 5.4×10^8 Btu/hr

D. 7.2×10^8 Btu/hr

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.07 [2.7/2.9]
QID: B3383 (P3384)

A reactor plant was operating at a steady-state power level with the following main condenser parameters:

Main condenser pressure:	1.2 psia
Cooling water inlet temperature:	60°F
Cooling water outlet temperature:	84°F

As a result of increased condenser air inleakage, the overall heat transfer coefficient of the main condenser decreases by 25%. Main condenser heat transfer rate and cooling water temperatures are unchanged. Which one of the following is the approximate resulting pressure in the main condenser?

A. 1.7 psia

B. 2.3 psia

C. 3.0 psia

D. 4.6 psia

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.08 [3.0/3.1]
QID: B378

Which one of the following actions will decrease plant efficiency?

A. Reducing turbine inlet steam moisture content

B. Reducing condensate depression

C. Increasing turbine exhaust pressure

D. Increasing temperature of feed-water entering the reactor vessel

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.08 [3.0/3.1]
QID: B1585

Which one of the following actions will increase plant efficiency?

A. Increasing turbine inlet steam moisture content

B. Increasing condensate depression

C. Decreasing turbine exhaust pressure

D. Decreasing temperature of feed water entering the reactor vessel

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.09 [2.5/2.7]
QID: B147

Which one of the following statements explains why condensate subcooling is necessary in the steam condensing phase of a plant cycle?

A. To increase overall secondary efficiency

B. To provide an improved condenser vacuum

C. To allow use of a higher circulating water temperature

D. To provide net positive suction head to the condensate pumps

ANSWER: D.

TOPIC: 293007
KNOWLEDGE: K1.09 [2.5/2.7]
QID: B583

Which one of the following statements describes condensate depression (subcooling) in the main condenser?

A. Increasing condensate depression improves the available net positive suction head for the condensate pumps.

B. Decreasing condenser vacuum increases condensate depression.

C. Increasing circulating water temperature increases condensate depression.

D. Decreasing condensate depression decreases plant efficiency.

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.09 [2.5/2.7]
QID: B883

A condenser is operating at 28 inches of Hg vacuum and a condensate outlet temperature of 88°F. Which one of the following most closely approximates the value for the condensate depression?

A. 8°F

B. 14°F

C. 24°F

D. 38°F

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.09 [2.5/2.7]
QID: B1084

The purpose of condensate depression in the turbine/condenser phase of the plant steam cycle is to...

A. maximize condenser vacuum.

B. maximize total plant efficiency.

C. minimize cavitation of the condensate pumps.

D. minimize thermal gradients in the condenser hotwell.

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.09 [2.5/2.7]
QID: B1484 (P3576)

A main condenser is operating at 28 inches of Hg vacuum with a condensate outlet temperature of 92°F. Which one of the following is the approximate amount of condensate depression?

A. 6°F

B. 10°F

C. 13°F

D. 17°F

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.09 [2.5/2.7]
QID: B2483

A condenser is operating at 28.5 inches of Hg vacuum with a condensate outlet temperature of 88°F. Which one of the following is the approximate value of condensate depression?

A. 2°F

B. 9°F

C. 13°F

D. 17°F

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.10 [2.7/2.9]
QID: B684

The measure of heat input per unit time from the reactor core to the reactor coolant in units of megawatts defines...

A. specific heat.

B. power density.

C. core thermal power.

D. percent reactor power.

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.11 [2.6/3.1]
QID: B385

Which one of the following is the most accurate indication of mass flow rate through the reactor for calculating core thermal power during reactor power operation?

A. Core flow rate

B. Steam flow rate

C. The sum of feed water and control rod drive flow rates

D. The sum of both recirculation loop flow rates

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.11 [2.6/3.1]
QID: B984

Which one of the following expressions describes core thermal power?

A. $\dot{Q}_{core} = \dot{Q}_{Feedwater} - \dot{Q}_{Steam} - \dot{Q}_{CRD} - \dot{Q}_{Recirc} + \dot{Q}_{Ambient} + \dot{Q}_{RWCU}$

B. $\dot{Q}_{core} = \dot{Q}_{Steam} - \dot{Q}_{Feedwater} + \dot{Q}_{CRD} + \dot{Q}_{Recirc} - \dot{Q}_{Ambient} - \dot{Q}_{RWCU}$

C. $\dot{Q}_{core} = \dot{Q}_{Steam} - \dot{Q}_{Feedwater} - \dot{Q}_{CRD} - \dot{Q}_{Recirc} + \dot{Q}_{Ambient} + \dot{Q}_{RWCU}$

D. $\dot{Q}_{core} = \dot{Q}_{Steam} - \dot{Q}_{Feedwater} - \dot{Q}_{CRD} - \dot{Q}_{Recirc} - \dot{Q}_{Ambient} - \dot{Q}_{RWCU}$

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.11 [2.6/3.1]
QID: B2984 (P2985)

A reactor is operating at power. The feedwater flow rate to the reactor vessel is 7.0 x 10^6 lbm/hr at a temperature of 440°F. The steam exiting the reactor vessel is at 1000 psia with 100% steam quality.

Ignoring all other heat gain and loss mechanisms, what is the core thermal power?

A. 1335 MWt

B. 1359 MWt

C. 1589 MWt

D. 1612 MWt

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.12 [2.6/3.1]
QID: B1384

Given the following data for a typical steam condenser:

Total tube area	= 500,000 ft^2
Cooling water flow rate	= 200,000 gpm
Condenser pressure	= 1 psia
Specific heat of cooling water (c_p)	= 1 Btu/lbm-°F
Cooling water inlet temperature	= 60°F
Cooling water outlet temperature	= 80°F
Steam condensing rate	= 3,000,000 lbm/hr
Mass of cooling water	= 8.34 lbm/gal

What is the condenser heat load in megawatts thermal (MWt)?

A. 587 MWt

B. 629 MWt

C. 671 MWt

D. 733 MWt

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B150

Given the following data for a typical steam condenser, select the approximate heat load rejected in megawatts thermal.

Total tube area	= 500,000 ft^2
Cooling water flow rate	= 200,000 gpm
Condenser pressure	= 1 psia
Specific heat of cooling water (c_p)	= 1 Btu/lbm-°F
Cooling water inlet temperature	= 60°F
Cooling water outlet temperature	= 85°F
Steam condensing rate	= 3,000,000 lbm/hr
Mass of cooling water	= 8.34 lbm/gal

A. 704 MWt

B. 734 MWt

C. 784 MWt

D. 834 MWt

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B386 (P384)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being greater than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was higher than actual feedwater temperature.

B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

C. The feedwater flow rate used in the heat balance calculation was lower than actual feedwater flow rate.

D. The steam pressure used in the heat balance calculation is higher than actual steam pressure.

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B1684

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 10°F lower than actual feed water temperature.

B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

C. The feed flow rate used in the heat balance calculation was 10% lower than actual feed flow rate.

D. The steam pressure used in the heat balance calculation was 50 psi lower than actual steam pressure.

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B2183 (P2185)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 20°F higher than actual feedwater temperature.

B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

C. The feed water flow rate used in the heat balance calculation was 10% higher than actual flow rate.

D. The steam pressure used in the heat balance calculation was 50 psi lower than actual steam pressure.

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B2284 (P2685)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 20°F higher than actual feedwater temperature.

B. The reactor recirculation pump heat input term used in the heat balance was 10% lower than actual.

C. The steam and feedwater flow rates used in the heat balance calculation were 10% higher than actual flow rates.

D. The operator miscalculated the enthalpy of the steam exiting the reactor vessel to be 10 Btu/lbm higher than actual.

ANSWER: A.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B2484

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The feed water temperature used in the heat balance calculation was 20°F lower than actual feed water temperature.

B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

C. The ambient heat loss value used in the heat balance calculation was only half the actual ambient heat loss.

D. The feed water flow rates used in the heat balance calculation were 10% higher than actual flow rates.

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B2684 (P2485)

The power range nuclear instruments have been adjusted to 100% based on a heat balance calculation. Which one of the following will result in indicated reactor power being higher than actual reactor power?

A. The feedwater temperature used in the heat balance calculation was 20°F higher than actual feedwater temperature.

B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

C. The feedwater flow rate used in the heat balance calculation was 10% lower than actual feedwater flow rate.

D. The ambient heat loss term was omitted from the heat balance calculation.

ANSWER: B.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B2785

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being lower than actual reactor power?

A. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

B. The feed water temperature used in the heat balance calculation was 20°F lower than actual feed water temperature.

C. The reactor vessel pressure used in the heat balance calculation was 30 psia higher than actual reactor vessel pressure.

D. The steam and feed water flow rates used in the heat balance calculation were 10% higher than actual flow rates.

ANSWER: C.

TOPIC: 293007
KNOWLEDGE: K1.13 [2.3/2.9]
QID: B2884 (P137)

The power range nuclear instruments have been adjusted to 100% based on a calculated heat balance. Which one of the following will result in indicated reactor power being greater than actual reactor power?

A. The operator miscalculated the enthalpy of the feed water to be 10 Btu/lbm higher than actual feed water enthalpy.

B. The reactor recirculation pump heat input term was omitted from the heat balance calculation.

C. The steam and feed water flow rates used in the heat balance calculation were 10% lower than actual flow rates.

D. The steam pressure used in the heat balance calculation was 50 psi higher than actual steam pressure.

ANSWER: B.